



Placerville, California
June 21, 1949

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J. M. Miller
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STATUS OF FOREST INSECT INFESTATIONS,
INSTITUTE OF FOREST GENETICS

(Season of 1948 and spring of 1949)

By J. M. Miller

1. Pine engraver beetles (Ips spp.)

Although no serious infestations have yet developed, the older plantings are now reaching the age where some attacks on standing trees by Ips beetles are to be expected, especially if fresh slash accumulates from thinnings and storm damage. Thinning of the sugar pine block in the 1929 progeny test in March 1949 soon attracted Ips confusus to the fresh cut logs. However, the threat to standing trees was removed by prompt transfer of the logs to the open field east of the Institute where they were exposed on a southern slope. Hot sun exposure and spraying with a DDT-oil formula quickly killed the Ips broods developing under the bark. Limbs and tops were hauled to the lava flat dump. This sort of an operation acts as an indirect control on Ips populations in the area by trapping and then destroying numbers of the beetles.

2. Turpentine beetle (Dendroctonus valens)

The turpentine beetle is continually attracted to and breeds in the stumps of recently cut trees in the arboretum and plantings. The beetle frequently makes pitch tubes on adjacent living trees. So far standing trees have successfully resisted these attacks. No particular hazard is involved in these turpentine beetle infestations around the Institute if the trees are in a thrifty growing condition, and for the present special control measures are not necessary.

3. Pine reproduction weevil (Cylindrocopturus eatoni)

No further mortality of surviving trees in the scopulorum pine block of the 1929 progeny test has occurred since the control clean up of 1947. The trees, however, do not appear to be in a thrifty condition and apparently are still infested by incipient larvae of the pine flathead. However, the trees are holding their own with the flat-head and seem to have a good chance for survival if the weevil can be kept out of the block.

The weevil was fairly active in other areas of the Institute during the 1948 season. A 22-year-old scopulorum pine near the northern boundary of the arboretum was killed and an adjacent tree topkilled; and a 15-year-old scopulorum pine near the south end of the arboretum was killed down to the 1940 internode. Early in May 1949, two 15-year-old Jeffrey pines, heavily infested, were found by Kimbrough near the NW corner of the 1937 progeny test. This is the first appearance of the weevil in this planting area. In the nursery

202 trees representing a number of pine species and hybrids were killed outside of the test cages. Most of these trees were in nursery beds where the sprinkling system was discontinued in 1948.

All of the trees containing overwintering broods of the weevil that were found in time were collected and used as brooding stock for the 1949 cage test. One known exception is the scopulorum pine at the south end of the arboretum which was not found until June 20 after most of the weevils had emerged.

Because of the demonstrated susceptibility of the ponderosa-apacheca hybrid, all trees in the outplanting were sprayed with 5% DDT emulsion in late June 1948; another application was made early in July. No trees were lost in this block; however, in an adjoining planting of the ponderosa-arizonica hybrid which was not sprayed, one tree was killed by the weevil during the 1948 season.

Spraying of the ponderosa-apacheca hybrids was again carried out in 1949, both in the nursery beds and in the hybrid test block. The ponderosa-arizonica hybrids were also given a protective spray. The application was made on June 16 with the following formula:

DDT	- - - - -	1 pound
Xylene	- - - - -	1 quart
Triton	- - - - -	1½ ounce
Water	- - - - -	20 gallons

4. The pine flathead (Melanophila californica)

The principal losses from this insect have occurred in the older P. scopulorum and P. banksiana trees in the arboretum. Five trees died in the arboretum during the 1938 season. These were cut in April and hauled to the dump at the lava flat. It is evident that many of the living but slow growing scopulorum and banksiana pines contain incipient stages of flathead larvae and any adverse conditions that tend to weaken the trees further, such as weevil attack or drought, will probably result in the death of more trees. Preventative control against the flathead is yet to be demonstrated. The soil fertilizers tried out in 1947 did not prove to be effective.

5. Resin midge (Retinidiplosis Sp.)

For the first time since 1941 the resin midge was noted in the plantings of the Institute. Dying needle tufts on ponderosa pines in the 1937 progeny test were examined on May 23 and were found to be the work of the resin midge. The infestation, however, is not causing much damage as the trees in this planting have reached the age and size where their growth is not likely to be stunted or the main stem deformed by resin midge injury.

6. Tip moth (Rhyacionia zozana)

Injury caused by this insect was common in 1938 on ponderosa and Jeffrey pines and hybrids of these species, both in the nursery and in the more recent outplantings. The 1929 and 1937 progeny tests where the tip moth was prevalent a few years ago have largely outgrown the hazard of serious injury from this pest.

Control of the tip moth in the nursery should be maintained unless it is considered that the injuries which it causes to young trees can be tolerated. The trees are not killed but the loss of terminal buds causes some deformation of form.

7. Needle-tyer (Zelleri haimbachi)

Infestations in the nursery, the hybrid test plantings, and in the 1938 transect test have been extremely annoying for the past three seasons, and the 1949 attack promises to be equally heavy. Many trees lose a high percent of the needles on the current seasonal shoot and undoubtedly suffer some setback in growth because of this defoliation. However, the new buds are not killed and the trees maintain their general form even under repeated defoliations. Before control measures can be proposed it will be necessary to work out the seasonal history of the insect and conduct tests to develop a control method.

8. Pitch moth (Vespanima sequoiae)

Only occasional attacks of the pitch moth can now be found. It became serious following the pruning program in the arboretum in 1940-41, but the healing over of the pruning scars and the control work in 1943-45 have reduced the infestation to a point where natural factors have taken over and seem to be holding the infestation to a low endemic condition.

9. Chermes

These insects are prevalent on the Douglas fir road screen along the north end of the arboretum. This infestation was of considerable interest to visiting English foresters in August 1948 (H. G. Champion) because of the trouble they are having with Chermes in Douglas fir plantations in England. However, Douglas firs here do not suffer noticeably. Chermes also appear on various pines in the nursery, especially on 3 to 8-year-old trees which are closely crowded in the beds. Some yellowing of foliage seems to result on the more heavily infested pines. There seems to be about the normal amount of chermes infestation in the spring of 1949 and spray control will not be necessary unless the insects become much more abundant.

10. Grasshoppers

The main area threatened by grasshoppers has been the hybrid test planting, mainly because these trees are young and are surrounded by open areas of grass and Klamath weed. A small amount of injury occurred in 1948 on young hybrid white pines but the grasshopper population was kept down by poison bait and by discing part of the surrounding area. There is no evidence of grasshoppers yet in 1949.

It would be of advantage in the control of both grasshoppers and the weevil in the hybrid test planting if the ground were disced each year to keep down weed growth. Both the open land surrounding the planting, and the ground between the rows should be disced. A four foot disc (i.e. one clearing an over all width of 4') is needed for the work between the rows as a greater width is likely to injure the trees.

Map attached.